

GENERATOR LOAD-OFF TRANSIENT ACCELERATION

ABSTRACT

A generator control unit (200) includes a field current modulator (212) that repeatedly switches between an ON state and an OFF state to control the flow of field current to the generator (20), a free-wheeling path (216) that feeds excitation current from the generator (20) back to the generator (20) as a field current component when the field current modulator (212) is in the OFF state, and an impedance circuit (220) that selectively and temporarily absorbs excitation current in the free-wheeling path (216) to reduce voltage overshoot of the generator (20) upon occurrence of an operating transition, such as a transition from high load to low load. In one implementation, the impedance circuit (220) is an RC circuit and a by-pass switch (222) is provided across the RC circuit. When excitation current in the free-wheeling path (216) is not to be absorbed by the RC circuit, the by-pass switch (222) is ON, thereby providing a low-impedance path for the excitation current. A by-pass driver (230) controls the by-pass switch (222) to change the by-pass switch (222) from ON to OFF based on one or more detection signals, e.g., indicating a load transition or power-up, thereby introducing the impedance circuit (220) into the free-wheeling path (216) to effect decay of the excitation current from the generator (20).